Journal of

Computational Physics

VOLUME 64, 1986

ACADEMIC PRESS, INC.
(Harcourt Brace Jovanovich, Publishers)
San Diego Orlando New York Austin London
Montreal Sydney Tokyo Toronto

Copyright © 1986 by Academic Press, Inc.
All Rights Reserved

No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without permission in writing from the copyright owner.

The appearance of the code at the bottom of the first page of an article in this journal indicates the copyright owner's consent that copies of the article may be made for personal or internal use, or for the personal or internal use of specific clients. This consent is given on the condition, however, that the copier pay the stated per copy fee through the Copyright Clearance Center, Inc. (27 Congress Street, Salem, Massachusetts 01970), for copying beyond that permitted by Sections 107 or 108 of the U.S. Copyright Law. This consent does not extend to other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale. Copy fees for pre-1986 articles are as shown on the article title pages; if no fee code appears on the title page, the copy fee is the same as for current articles.

0021-9991/86 $3.00

Printed by the St. Catherine Press, Ltd., Bruges, Belgium

CONTENTS OF VOLUME 64

NUMBER 1, MAY 1986

REVIEW ARTICLE

DIMITRI MIHALAS AND PAUL B. KUNASZ. The Computation of Radiation Transport Using Feautrier Variables. II. Spectrum Line Formation in Moving Media 1

REGULAR ARTICLES

YAKIR REUVEN, MITCHELL D. SMOOKE, AND HERSCHEL RABITZ. Sensitivity Analysis of Boundary Value Problems: Application to Nonlinear Reaction–Diffusion Systems 27

C. I. GOLDSTEIN. Finite Element Methods Applied to Nearly One-Way Wave Propagation 56

Z. U. A. WARSI. Numerical Grid Generation in Arbitrary Surfaces through a Second-Order Differential-Geometric Model 82

A. GREENBAUM AND J. M. FERGUSON. A Petrov–Galerkin Finite Element Method for Solving the Neutron Transport Equation . . 97

G. R. BAKER AND M. J. SHELLEY. Boundary Integral Techniques for Multi-connected Domains 112

A. D. KENNEDY, J. KUTI, S. MEYER, AND B. J. PENDLETON. Program for Efficient Monte Carlo Computations of Quenched $SU(3)$ Lattice Gauge Theory Using the Quasi-heatbath Method on a CDC CYBER 205 Computer 133

GLENN BATEMAN AND ROBIN G. STORER. Direct Determination of Axisymmetric Magnetohydrodynamic Equilibria in Hamada Coordinates 161

RONALD M. YORSTON. Free-Flight Time Generation in the Monte Carlo Simulation of Carrier Transport in Semiconductors 177

M. E. ALEXANDER. Simulation of Binary-Single Star and Binary-Binary Scattering 195

RICHARD A. FRIESNER, ROBERT E. WYATT, C. HEMPEL, AND B. CRINER. A Generalized Version of the Recursive Residue Generation Method for Vector Computers 220

W. TOBOCMAN. Iterative Inverse Scattering Method Employing Gram–Schmidt Orthogonalization 230

A. ECKER AND D. H. E. GROSS. A System of Simultaneous Non-linear Equations in Three-Thousand Variables 246

NOTES

ROBERT PIESSENS AND SHAFIQUE AHMED. Approximation for the Turning Points of Bessel Functions 253

J. S. Bramley. The Calculation of Eigenvalues for the Stationary Perturbation of Symmetrical Pipe Poiseuille Flow 258
John P. Boyd. Polynomial Series versus Sinc Expansions for Functions with Corner or Endpoint Singularities 266
William Celmaster and K. J. M. Moriarty. A Method for Vectorized Random Number Generators 271

Announcement 276

List of Forthcoming Articles 277

Number 2, June 1986

K. Gustafson and K. Halasi. Vortex Dynamics of Cavity Flows . . . 279
W. M. Pickering. On the Solution of Poisson's Equation on a Regular Hexagonal Grid Using FFT Methods 320
M. G. G. Foreman. An Accuracy Analysis of Boundary Conditions for the Forced Shallow Water Equations 334
O. R. Tutty. On Vector Potential–Vorticity Methods for Incompressible Flow Problems 368
F. Hayot, H. J. Herrmann, J.-M. Normand, P. Farthouat, and M. Mur. A Special Purpose Computer for the Electrical Conductivity of Disordered Media 380
M. Pouagare and B. Lakshminarayana. A Space-Marching Method for Viscous Incompressible Internal Flows 389
M. F. Reusch and G. H. Neilson. Toroidally Symmetric Polynomial Multipole Solutions of the Vector Laplace Equation 416
Chr. Kaas-Petersen. Computation of Quasi-periodic Solutions of Forced Dissipative Systems II 433
William F. Moss. Collocation for an Integral Equation Arising in Duct Acoustics 443
Timothy N. Phillips. On the Numerical Treatment of Boundary Singularities in Elliptic Problems 459
Eugene C. Gartland, Jr. High Order Finite-Difference Methods for Two-Point Boundary Value Problems with Singular Sources 473
I. J. Thompson and A. R. Barnett. Coulomb and Bessel Functions of Complex Arguments and Order 490

Note

P. P. Delsanto and J. D. Alemar. Use of Monte Carlo Techniques for Complex Angular Momentum Algebra Calculations 510

List of Forthcoming Articles 515

Author Index for Volume 64 516